

Nondestructive methods for the structural evaluation of wood floor systems in historic buildings: preliminary results

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Abstract

To date, there is no standard method for evaluating the structural integrity of wood floor systems using nondestructive techniques. Current methods of examination and assessment are often subjective and therefore tend to yield imprecise or variable results. For this reason, estimates of allowable wood floor loads are often conservative. The assignment of conservatively low, allowable floor loads often means that the continued use, or adaptive use, of an historic building is uneconomical, resulting in demolition of inappropriate rehabilitation. Successful completion of this project will enable inspectors to nondestructively assess the load-carrying ca-

capacity of floor systems and thus assign safe, appropriate floor load levels without needlessly compromising historic fabrics.

Nondestructive techniques for evaluating the structural integrity of wood floor systems in historic buildings were investigated, with an emphasis on the development of test procedures for assessing in-place floor systems. Dynamic test methods that include transverse vibration, ultrasonic, and stress-wave transmission techniques were evaluated in an effort to assess and predict the residual performance of in-place wood floors.

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